

# A new species of *Pinndorama* Domahovski (Hemiptera: Cicadellidae: Hyalojassini) from the Amazon Rain Forest, Brazil

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**Abstract.** *Pinndorama dilatata* sp. nov. is described based on specimens from Amazonas State, Brazil. The genus is firstly recorded from the Brazilian states of Amazonas, Goiás, Maranhão, and São Paulo and a distribution map is provided, including new records to *P. diana*, *P. guartela*, *P. melanocephala*, *P. ronurensis*, and *P. pitanga*. The key to males is updated to include the new species and minor improvements.

**Keywords.** Auchenorrhyncha; Distribution map; lassinae; Leafhoppers; Taxonomy.

## INTRODUCTION

The tribe Hyalojassini Evans, 1972 was revalidated by Dai *et al.* (2015) from a synonymy under lassini Walker 1870. The group is currently the third largest of the twelve tribes of lassinae, comprising 40 genera and 161 species distributed in Southeast Asia (nine genera and 35 species) and the Americas (31 genera and 126 species) (Dai *et al.*, 2015; Krishnankutty *et al.*, 2016; Domahovski, 2021a, b, c; Yang & Dai, 2022). In the Americas, a proportion of approximately 86.5% of species are distributed in the Neotropical and 15% in the Nearctic region (pers. obs.). The Brazilian fauna currently comprises 15 genera and 32 species, with most species occurring in the Atlantic Forest (Takiya *et al.*, 2023). Their biology remains poorly known, however, these insects are known to feed on woody plants and shrubs (Krishnankutty *et al.*, 2016). In South America, some species were recently reported feeding on plants of the families Asteraceae, Lauraceae, Melastomataceae, and Myrtaceae (Domahovski, 2021c). Among them, *Pinndorama pitanga* Domahovski, 2021 feeds on *Eugenia uniflora* L. and *P. guartela* on *Myrcia hartwegiana* (O. Berg) Kiaers, both belonging to Myrtaceae. (Domahovski, 2021c).

*Pinndorama* Domahovski, 2021c was recently described to include eight species from Brazil, Paraguay, and Peru, being currently the fourth largest genus in Hyalojassini, only behind the Oriental genus *Trocnadella* Pruthi, 1930 with 10 species,

and the American *Penestrangia* Beamer & Lawson, 1945 with 14 species and *Momoria* Blocker, 1979 with 29 species. The genus is recognized by forewings with appendix and first apical cell wide, more membranous than adjacent cells and with vein separating appendix and first apical cell, evanescent apically; male sternite VIII longer than VI and VII combined, and completely hiding the ventral portion of pygofer; pygofer without processes and lateral lobe without macrosetae; subgenital plate with well developed pseudostyle and with external margin enfolding laterally the anteroventral portion of pygofer; connective amorphous; and style long, with apex curved dorsally (Domahovski, 2021c).

Among the Neotropical genera of Hyalojassini, *Pinndorama* is most closely related to *Garlica* Blocker, 1976, *Gehundra* Blocker, 1976, *Grunchia* Kramer, 1963, *Jivena* Blocker, 1976, *Maranata* Blocker, 1979, and *Penestrangia* Beamer & Lawson, 1945, due to the following combination of characters: subgenital plate present and well developed; pseudostyle present; connective absent; and style long, approximately straight and placed vertically in relation to pygofer axis. In relation to these genera, *Pinndorama* shares with *Garlica*, *Gehundra*, *Grunchia*, and *Jivena* the male sternite VII long, extending to the apex of pygofer, but can be distinguished in having forewing with vein separating appendix and first apical cell evanescent apically and male pygofer lacking macrosetae.

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In this work, a new species is described, the key to males is updated, and a distribution map is presented for *Pinndorama* including new records to Brazilian states.

## MATERIAL AND METHODS

The specimens studied herein are deposited in the following collections: **DZUP** = Coleção Entomológica Pe. Jesus Santiago Moure, Universidade Federal do Paraná, Curitiba, Paraná, Brazil; **DZRJ** = Coleção Entomológica Prof. José Alfredo Pinheiro Dutra, Departamento de Zoologia, Instituto de Biologia, Universidade Federal do Rio de Janeiro, Rio de Janeiro, Brazil; **INPA** = Instituto Nacional de Pesquisas da Amazônia, Manaus, Brazil.

Morphological terminology follows Young (1968, 1977), except for the head features (Hamilton, 1981; Mejdalani, 1998) and leg chaetotaxy (Rakitov, 1997). The use of the terms “pseudostyle” (thickened portion along the inner margin of the subgenital plate) follows

Blocker (1979) and “gonoplac” (third valvula of ovipositor) follows Mejdalani (1998). Techniques used for genitalia dissection (male and female) follow Oman (1949), including few modifications described by Cavichioli & Takiya (2012). Verbatim label data are specified within quotation marks, with a backslash (\) separating the lines on the labels. Square brackets ([ ]) are used to supplement abbreviated information. The distribution map was compiled based on shape layers and terminology of Latin America and Caribbean ecological systems defined by Josse *et al.* (2003) in QGIS <https://www.qgis.org/en/site>.

## RESULTS

### Taxonomy

#### *Pinndorama* Domahovski

*Pinndorama* Domahovski, 2021c: 1843. Type-species: *Pinndorama pitanga* Domahovski, 2021c: 1867.

### Key to males of *Pinndorama*

1. Forewing with basal third brown and apical two-thirds yellow, one rounded black spot at midlength of corium, apex of clavus and apical cells brown (Domahovski, 2021c: 1857, fig. 9a) ..... 2  
— Coloration not as above ..... 4
2. Pseudostyle slightly expanded apically, apex with small dentiform process (Domahovski, 2021c: 1857, fig. 9g) ..... *P. pitanga* Domahovski  
— Pseudostyle tapered apically (Domahovski, 2021c: 1856, fig. 8g) ..... 3
3. Subgenital plate with external margin broadly rounded, continuous to pseudostyle apex (Domahovski, 2021c: 1856, fig. 8g). Aedeagus curved dorsally, apex, in lateral view, rounded (Domahovski, 2021c: 1856, fig. 8j) ..... *P. paraguaia* Domahovski  
— Subgenital plate with external margin rounded and restricted to basal half of plate, not continuous to pseudostyle apex (Domahovski, 2021c: 1859, fig. 11g). Aedeagus with apical portion tapered, slightly curved dorsally and acute (Domahovski, 2021c: 1859, fig. 11j) ..... *P. ronurensis* Domahovski
4. Head and thorax yellow, forewing with one pair of small black spots at midlength and apical portion smoky (Fig. 2A, B). Aedeagus, in lateral view, acute apically (Domahovski, 2021c: 1846, fig. 1j) ..... 5  
— Coloration not as above. Aedeagus, in lateral view, rounded apically (Domahovski, 2021c: 1850, fig. 3j) ..... 6
5. Pygofer ventral margin straight (Fig. 2F). Style, in lateral view, expanded subapically, apex forming a small claw-like process curved dorsally (Fig. 2J) .....  
..... *P. dilatata* **sp. nov.**  
— Pygofer ventral margin rounded (Domahovski, 2021c: 1846, fig. 1e). Style, in lateral view, not expanded subapically, apical third bending dorsally (Domahovski, 2021c: 1846, fig. 1i) ..... *P. diana*e Domahovski
6. Coloration uniform brown (Domahovski, 2021c: 1861, fig. 13a). Pygofer ventral margin with row of several short thick setae (Domahovski, 2021c: 1861, fig. 13e, f) ..... *P. sinopensis* Domahovski  
— Coloration of head and pronotum dark-brown to black contrasting with forewings light-brown to yellow (Domahovski, 2021c: 1850, fig. 3a). Pygofer with few thin setae, or with subapical group, not forming a row (Domahovski, 2021c: 1852, fig. 5e, f) ..... 7
7. Subgenital plate deeply excavated between pseudostyle and external margin (Domahovski, 2021c: 1850, fig. 3g). Style, in lateral view, straight, with apex only curved dorsally (Domahovski, 2021c: 1850, fig. 3i) ..... *P. quartela* Domahovski  
— Subgenital plate not excavated between pseudostyle and external margin (Domahovski, 2021c: 1852, fig. 5g). Style, in lateral view, curving dorsally from base (Domahovski, 2021c: 1852, fig. 5i) ..... 8
8. Pseudostyle long and slender (Domahovski, 2021c: 1852, fig. 5g) ..... *P. matogrossensis* Domahovski  
— Pseudostyle short and broad (Domahovski, 2021c: 1855, fig. 7g) ..... *P. melanocephala* Domahovski

### List of species of *Pinndorama*

*P. diana*e Domahovski, 2021c: 1846. Brazil (Bahia [**new record**], Goiás [**new record**], Mato Grosso, Maranhão [**new record**], Mato Grosso do Sul, Minas Gerais, and Paraná).  
*P. dilatata* **sp. nov.** Brazil (Amazonas).

*P. quartela* Domahovski, 2021c: 1849. Brazil (Paraná and São Paulo [**new record**]).  
*P. matogrossensis* Domahovski, 2021c: 1853. Brazil (Mato Grosso).  
*P. melanocephala* Domahovski, 2021c: 1863. Brazil (Mato Grosso [**new record**], Maranhão [**new record**], Minas Gerais [**new record**], and Distrito Federal); Peru (Cuzco).

*P. paraguaia* Domahovski, 2021c: 1866. Paraguay (Canindeyu).

*P. pitanga* Domahovski, 2021c: 1867. Brazil (Minas Gerais, Paraná, and Rio de Janeiro).

*P. ronurensis* Domahovski, 2021c: 1869. Brazil (Goiás [new record] and Mato Grosso).

*P. sinopensis* Domahovski, 2021c: 1871. Brazil (Mato Grosso).

### Distribution

#### Fig. 1

*Pinndorama* species are distributed across different biomes in South America (Fig. 1), such as the Cerrado savannah in Central Brazil, Amazonian and Atlantic rainforests, and moist Andean Forest, ranging in altitude from 0 to 1,500 m a.s.l. (Fig. 1).

### *Pinndorama dilatata* sp. nov.

#### Figs. 2, 3

**Diagnosis:** Yellow leafhoppers (Fig. 2A, B) with forewing bearing one pair of small black spots at midlength and apical portion smoky. Style (Fig. 2J), in lateral view, with dorsal margin expanded subapically; apex forming a small claw-like process curved dorsally.

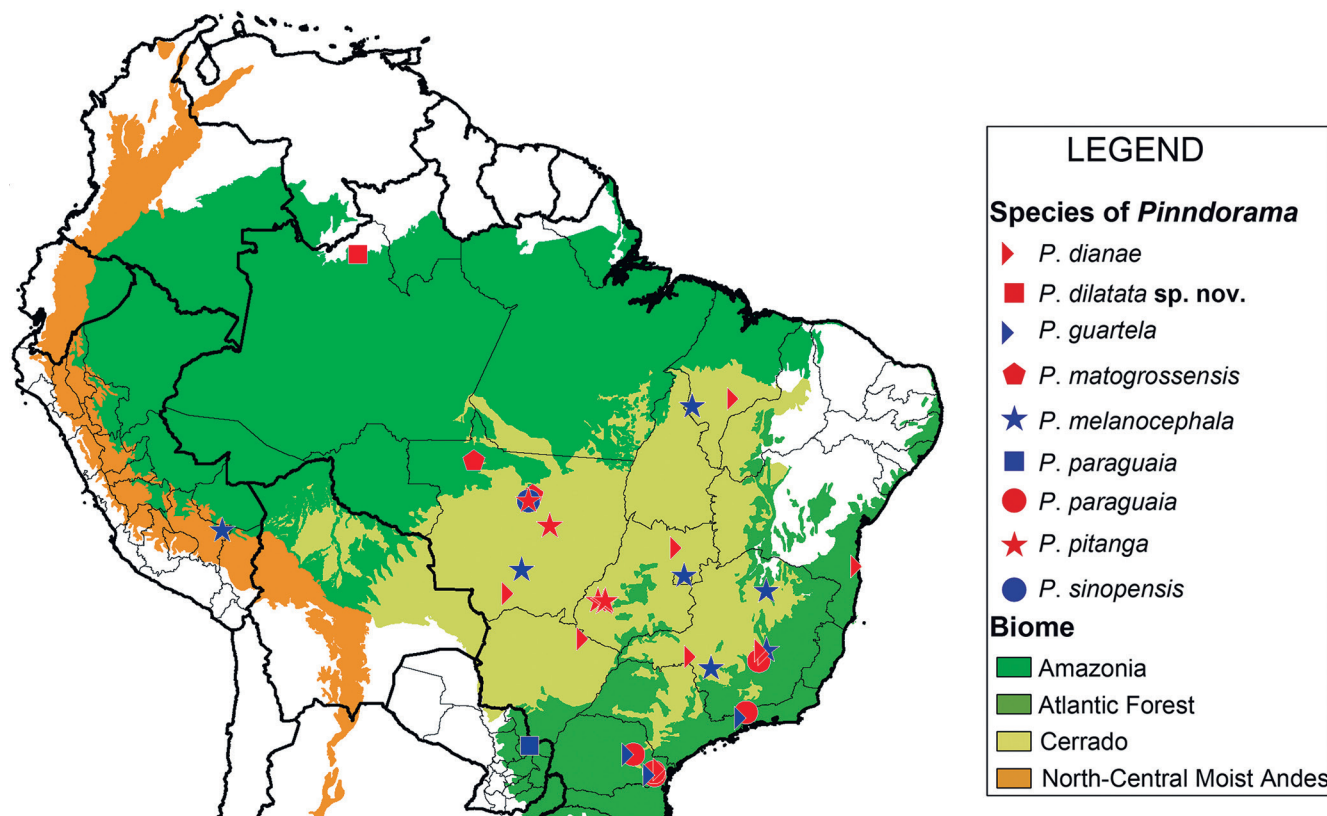
**Measurements (mm):** Total length: Holotype, male: 4.0. Paratypes, female (n = 2): 7.9-9.1.

### Description

**Coloration:** Head and thorax (Fig. 2A-C) uniformly yellow without maculae. Forewing (Fig. 2A, B) translucent pale yellow with black setae; one pair of small black spots at midlength: one at clavus and one near apex of inner discal cell; apex of clavus, base of appendix, apex of antepical cells, and apical cells, smoky. Metatibia (Fig. 2A, B) with cucullate bases of macrosetae black. Pygofer with apex red.

**External morphology:** Features as in the genus description of Domahovski (2021c).

**Male terminalia:** Sternite VIII (Fig. 2D) slightly tapered apically; posterior margin rounded, slightly emarginated and weakly sclerotized at middle. Pygofer (Fig. 2E, F), in lateral view, with dorsal margin deeply notched medially; ventral margin broadly rounded near base, with small setae, straight medially, slightly curving dorsally near apex and bearing few moderately long filiform setae; apex broad and slightly concave; in ventral view (Fig. 2G), lateral margins carinated; few short setae near base, on lateral carina, and forming small group subapically on inner portion of lateral margin. Subgenital plate (Fig. 2E, F, H) with apodeme short, weakly extending dorsally; inner margin with some striae; external margin strongly developed laterally, rounded; pseudostyle thin, straight, produced ventrally, with group of setae near apex. Style (Fig. 2E, I, J) slender and straight, positioned perpendicular relative to pygofer; in lateral view (Fig. 2J), posterior (dorsal) margin expanded subapically;

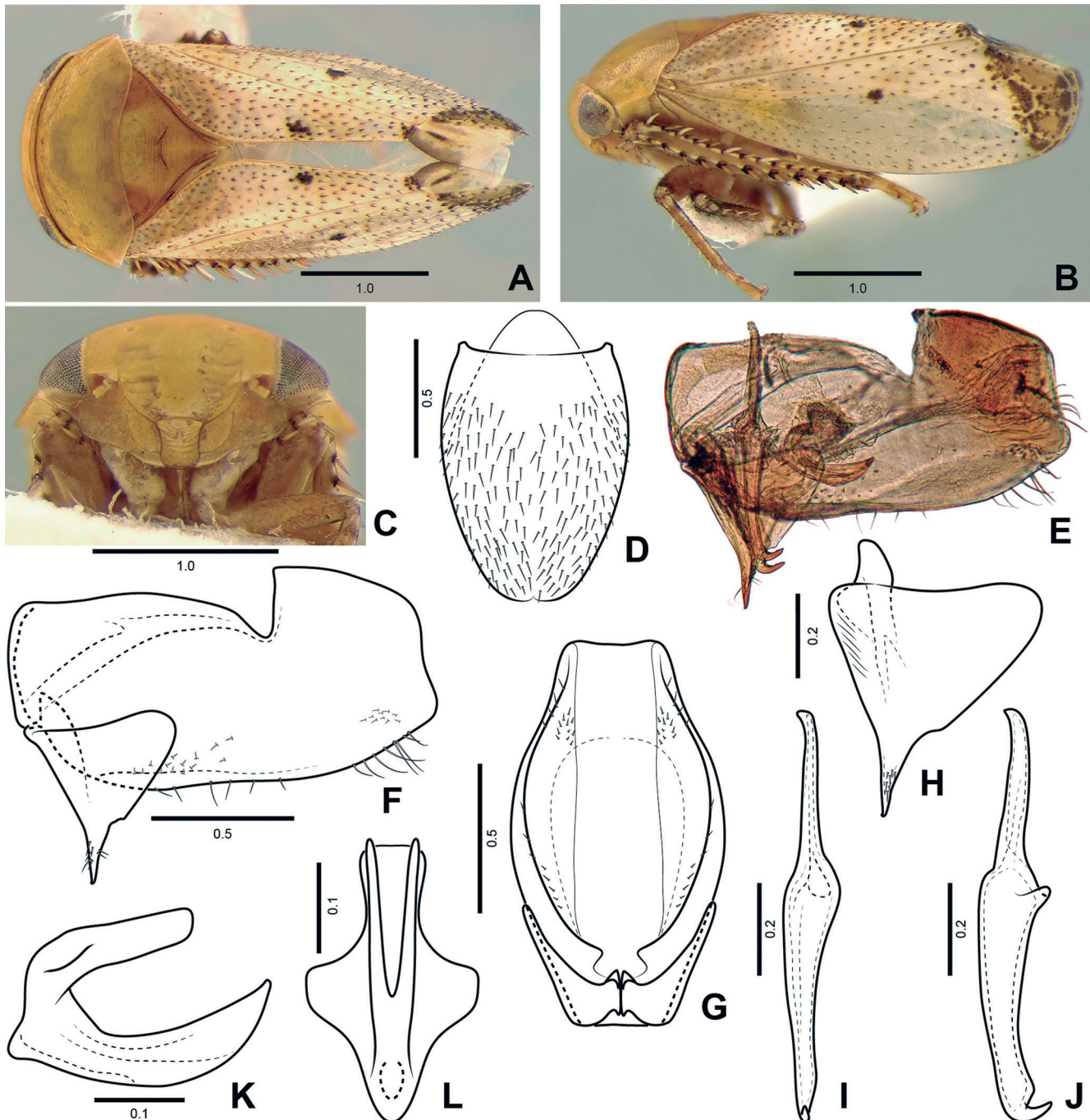


**Figure 1.** Distribution map of *Pinndorama* species occurring on different ecological systems in South America.

apex forming a small claw-like process curved posterad. Aedeagus (Fig. 2K, L) dorsal apodeme shorter than shaft, lateral margins, in caudal view, near base expanded laterally forming pair of subtruncated lobes, apex, in lateral view, rounded; shaft moderately thin, slightly curved dorsally, weakly expanded medially; apex tapered, acute; in ventral view, distal portion deeply clefted. Other characteristics as in generic description.

**Female terminalia:** Sternite VII (Fig. 3A) 2x wider than long; posterior margin slightly excavated laterally of small rounded median lobe, which occupies median third and is produced posteriorly as far as lateral angles.

Pygofer (Fig. 3B, C) with ventral margin broadly rounded; apex slightly excavated; lateral surface with short setae on ventral half; apex with few thicker setae. First valvifer (Fig. 3D) rectangular; fused to each other by a narrow sclerotized extension of anteroventral margin. First valvula (Fig. 3D) with dorsal and ventral margins almost parallel; ventral interlocking device long, extending over basal two-thirds; dorsal sculptured area areolate not reaching dorsal margin; apical portion (Fig. 2E) gradually tapered and acute. Second valvifer (Fig. 3H) about 3x higher than long; with median posterior finger-like projection. Second valvula (Fig. 3F, G) with three distinct widely spaced teeth; apex with dorsal and ventral mar-



**Figure 2.** *Pinndorama dilatata* sp. nov., male holotype. (A) Habitus, dorsal view. (B) Habitus, lateral view. (C) Head, ventral view. (D) Sternite VIII, ventral view. (E) Genital capsule, lateral view. (F) Pygofer and subgenital plate, lateral view. (G) Pygofer and subgenital plate, ventral view. (H) Subgenital plate, lateral view. (I) Style, dorsal view. (J) Style, lateral view. (K) Aedeagus, lateral view. (L) Aedeagus, ventral view. Scale bars in mm.

gins with denticles. Gonoplac (Fig. 3H) dorsoapical margin long, with half length of gonoplac; external surface without dentiform cuticular projections, with few short setae on median portion of ventral margin; apex narrowly rounded.

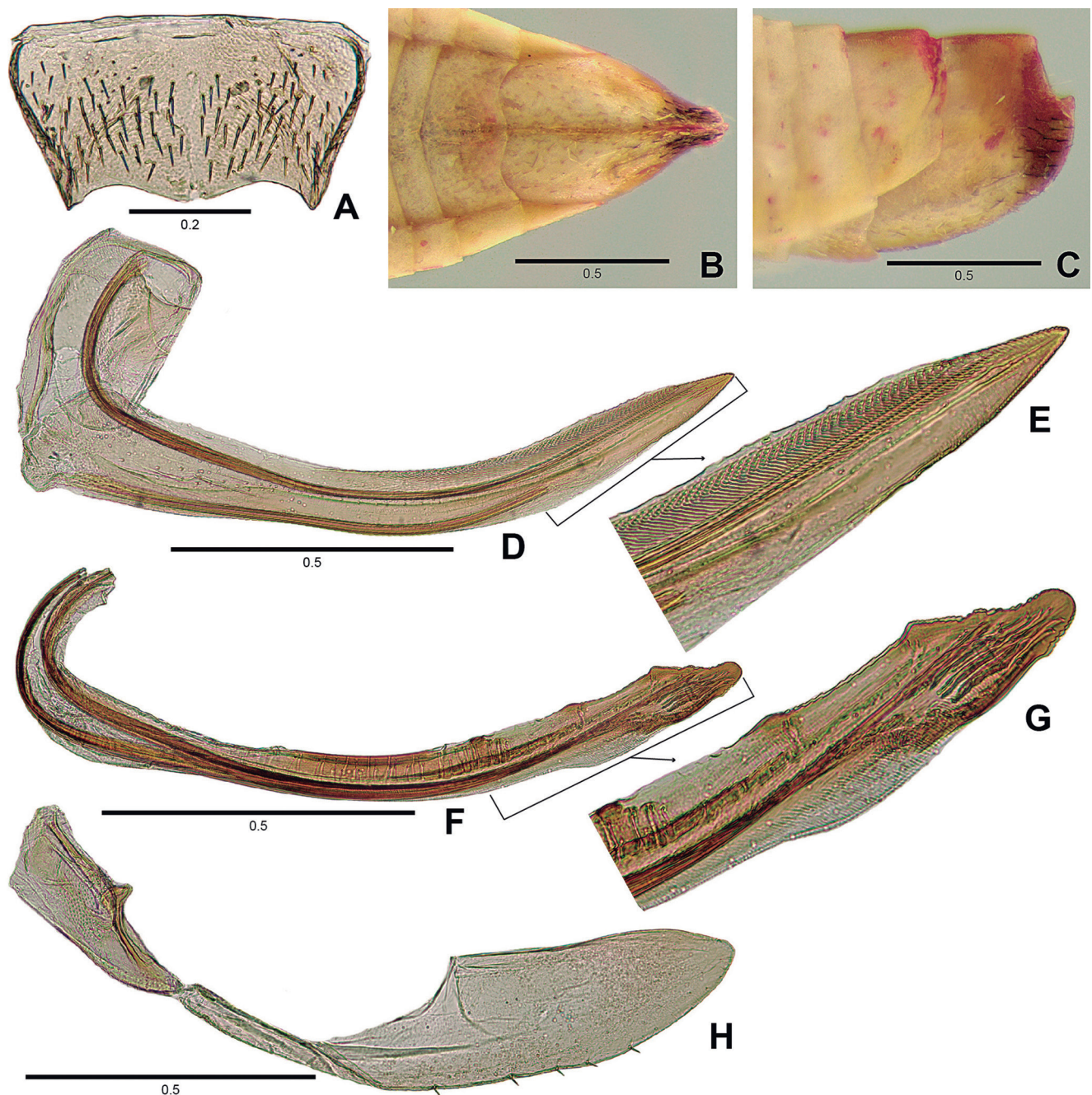
**Etymology:** The new species name “dilatata” refers to the style broadened subapically.

#### Material examined

**Holotype male:** “BRASIL: Amazonas, Barcelos, \ Rio Padauari, Com.Ararão/Ararinha \ 00.50487°N, 064.05831°W \ 04.VI.2010 light \ Cavichioli & Takiya leg.” (INPA).

**Paratypes:** 2♀, same data of holotype (INPA, DZRJ).

**Remarks:** The new species is most similar to *P. diana* in having similar coloration (Fig. 2A), subgenital plate triangular, with pseudostyle short and thin (Fig. 2H), and aedeagus, in lateral view, tapering to acute apex (Fig. 2K). However, *P. dilatata* **sp. nov.** can be easily separated by its pygofer with ventral margin straight (Fig. 2F), subgenital plate with longer pseudostyle (Fig. 2H), style broadened subapically (Fig. 2J), aedeagus, in lateral view, with shaft broader (Fig. 2K), and female sternite VII produced posteriorly as far as lateral angles (Fig. 3A).



**Figure 3.** *Pinndorama dilatata* **sp. nov.**, female paratype. (A) Sternite VII, ventral view. (B) Distal portion of abdomen, ventral view. (C) Distal portion of abdomen, lateral view. (D) First valvifer and first valvula, lateral view. (E) Apical portion of first valvula. (F) Second valvula, lateral view. (G) Apical portion of second valvula. (H) Second valvifer and gonoplac, lateral view. Scale bars in mm.

### Additional material examined

*Pinndorama diana* Domahovski, 2021. Brazil: Bahia (**new record**): 1♂, Una, ReBio Una, alojamento, 15°10'36.6"S, 39°03'28.9"W, 03.IV.2023, luz, D.L.P. Guimarães (DZRJ); Goiás (**new record**): 1♂, Alto Paraíso de Goiás, Morada do Sol, GO023, 14°12'16.4"S, 47°50'33.0"W, 792 m, 26.X.2013, B.M. Camisão, C.C. Gonçalves & D.M. Takiya (DZRJ); Minas Gerais: 1♂, Brasil, MG, Jaboticatubas, Parque Nacional da Serra do Cipó, Alojamento da sede, 19°20'57.3"S, 43°37'08.0"W 800 m, 16-19.XI.2018, A.P.M. Santos & A.A. Alves (DZRJ); 1♂, 1♀, Itabiara, Ipoema est. [estrada] para Serra dos Alves, ponte sobre Rio do Tanque, Cachoeira Boa Vista, 19°32'13.2"S, 43°26'50.5"W, 695 m, pano branco, 13.XII.2019, A.A. Alves, A.P.M. Santos, A.L. Henriques-Oliveira, & B.M.S. Cavalcante (DZRJ); Maranhão (**new record**): 1♂, Brasil, Maranhão, Mirador, Parque Estadual Mirador, Base do Mel, 06°43'50.8"S, 44°59'01.6"W 264 m, pano branco, 26.IX.2014, T.T. Andrade & W.R.M. Souza (DZRJ).

*Pinndorama quartela* Domahovski, 2021. Brazil: São Paulo (**new record**): 2♀, Brasil: SP, S.J. [São José] do Barreiro, P.N. [Parque Nacional] da Serra da Bocaina, arredores alojam. [alojamento], -22.733757, -44.616643, 1,522 m, sweep, 09-11.I.2023, AP Pinto, AC Domahovski, J Ehlert & LP Aguiar leg. (DZUP).

*Pinndorama melanocephala* Domahovski, 2021. Brazil: Mato Grosso (**new record**): 1♂, P.N. [Parque Nacional] Chapada dos Guimarães, Poço das Antas, 15°18'50.0"S, 55°51'09.9"W, 289 m, 10.II.2015, D.M. Takiya & A.P.M. Santos (DZRJ); Minas Gerais (**new record**): 1♂, Brasil: Minas Gerais, São Roque de Minas, Parque Nacional da Serra da Canastra, 25.III.2015, A.L. Henriques-Oliveira (DZRJ); 1♂, P.N. [Parque Nacional] da Serra do Cipó, Córrego das Pedras, 16°22'16.7"S, 43°36'02.8"W, 766 m, malaise, 02-05.III.2013, Takiya, Santos, Henriques, Oliveira, Camisão, Sampaio (DZRJ); 1♂, Santana do Riacho, PARNA da Serra do Cipó, Córrego Bocaina, 19°20'45.5"S, 43°35'26.3"W, 796 m, 03.III.2013, B.M. Camisão, D.M. Takiya, A.P.M. Santos, A.L. Henriques-Oliveira & B.H.L. Sampaio (DZRJ); Maranhão (**new record**): 1♂, Carolina, PARNA Chapada das Mesas, Riacho Sucuri, 07°7'05.6"S, 47°18'31.6"W, 240 m, s\ data, J.A. Rafael, F. Limeira de Oliveira, T.L. Rocha & G.A. Reis (DZRJ); Peru: Cuzco: 2♂, 19 rd km W Quincemil, Rio Araza tributary 13°20'10"S, 70°50'57"W, 874 m, malaise, 23-31.VIII.2012, R.R. Cavichioli, J.A. Rafael, A.P.M. Santos & D.M. Takiya (DZRJ).

*Pinndorama pitanga* Domahovski, 2021. Brazil: Paraná: 1♂, Curitiba, Centro Politécnico, estacionamento do Biológicas, 25°26'49"S, 49°13'54"W, 925 m, 22-25. XI.2022, A.C. Domahovski (DZUP).

*Pinndorama ronurensis* Domahovski, 2021. Brazil: Goiás (**new record**): 1♂, Caiapônia, Rio Sucupira, 16°51'47.8"S, 52°01'45.9"W, 599 m, pano branco, 28.II.2012, E. Raimundi, L.F. Sgarbi & A.P.M. Santos (DZRJ); 1♂, Caiapônia, Cachoeira do Yocapa, L30, 16°56'48.9"S, 51°43'33.8"W, 680 m, Pensilvania UV, 29.II.2012, E. Raimundi, L.F. Sgarbi & A.P.M. Santos

(DZRJ); 1♂, Caiapônia, Riacho, L31, 16°51'53.0"S, 51°39'31.7"W, 639 m, 29.II.2012, pano branco, E. Raimundi, L.F. Sgarbi & A.P.M. Santos (DZRJ).

**AUTHORS' CONTRIBUTIONS:** ACD: Conceptualization, Investigation, Writing – original draft; ACD, CCG: Visualization; CCG, DMT: Resources, Writing – review & editing. All authors actively participated in the discussion of the results, they reviewed and approved the final version of the paper.

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